ment, not on a stage in history, yet the psychologic factor appears (p. 394). In nomadic Algeria horses are less and less bred. Formerly the horse was a valuable aid in pillaging. But the stable French government has made pillage unprofitable, so the horse is not bred. So of old the nomads invaded the sown land every season of drought, and produced a border of unsafe, neglected plowland near the desert. Under good government this is occupied by agriculture and nomadism appears to be on the wane. Too hasty conclusion might suggest that the climate is becoming moister. Conversely, the overthrow of good government allows nomadism to drive back agriculture, producing the appearance of more arid climate. This is of course of interest in connection with Dr. Huntington's studies of climate fluctuations in the East, which Brunhes seems not to know. He warns against the neglect of the psychologic factor at every turn. The essays on the Fang in the French Congo, the inhabitants of the Algerian oases, the Souf and M'zab, and the perpetual migration of the people of the valley of d'Anniviers in Valais well repay reading.

A third group of essential facts is "facts of destructive economy," man's exhaustion of forests, animal species and mineral deposits. This leads to an interesting account of the human geography of coal.

Professor Brunhes's work is rich in geographical material. His geography is not a science of relations but a subject of study and a most interesting one. The earth is its topic and only when the adjective human is added does man come into the story. MARK JEFFERSON.

Nautical Science in its Relation to Practical Navigation, together with a Study of the Tides and Tidal Currents. By Charles Lane Poor. xi and 329 pp., illustrations and index. G. P. Putnam's Sons, New York and London, 1910.

The work falls into three rather disconnected parts. The first of these gives an elementary account of the earth and the solar system apparently for "rule of thumb" navigators, who may be familiar with some processes but few principles of navigation. The sketch is not limited to things bearing on navigation but is very slight and in very simple language. In the account of Foucault's pendulum the explanation is the familiar but unsatisfactory reference to the "lagging" of a south-bound body behind the faster moving earth of the southern end of its swing and "running ahead" on going north. If Prof. Poor should swing his pendulum east and west it would still "deviate" to the right, as he is aware, though performing its whole swing in the same latitude. Another third of the book deals with matters of navigation, finding time, latitude and longitude at sea. The history of Sumner lines and the account of their importance is good. The attempt to dispense with mathematics rather collapses when several forms of the equation for solution of hour angle are introduced. Here they are quite out of place. A trigonometry or a spherical astronomy would develop them and transform them, and, after all, what can be simpler than that? Is not a good mathematical treatise the simplest possible means of getting at mathematical results and understanding them?

Last comes an excellent account of tides as local oscillations of the ocean, and of tide-predicting machines. Dr. Harris's part in the discovery of the local character of tides is overemphasized. As the present reviewer noted in the *National Geographic Magazine* just before Dr. Harris's papers were published, the oscillation of the Atlantic was detected nearly a century ago by Young and Whewell and Fitzroy. As to the cause of the tide our author makes a good

point when he emphasizes the importance of horizontal forces as compared with vertical ones in efficiency for raising tides, but has lost an important advance in popular statement when he failed to utilize the Davis-Darwin doctrine of centrifugal force partly balancing the moon's attraction. Still the 80 pages on tides are clear and fairly new. MARK JEFFERSON.

NEW MAPS

NORTH AMERICA

U. S. COAST AND GEODETIC SURVEY MAPS

ALASKA. Sketch of General Progress, U. S. Coast and Geodetic Survey, June 30, 1910. 1:5,000,000 (78.90 miles to an inch). Black. Accompanies Report of Supt., C. and G. S., 1909-10. [Symbols for gravity stations, latitude, longitude and azimuth determinations, tidal and magnetic observations, areas covered by triangulation, topographic and hydrographic surveys, lines of deep-sea soundings.]

HAWAIIAN ISLANDS. General Progress Sketch, U. S. Coast and Geodetic Survey, June 30, 1910. (1:2,000,000 approx. [31.56 miles to an inch.].) Black. On part of plate including Porto Rico. Accompanies Report of Supt., C. and G. S., 1909-10. [Hawaiian Government Surveys included; indicates areas covered by triangulation, topographic and hydrographic surveys, lines of deep-sea soundings, and stations of which longitudes have been determined by telegraph.]

PHILIPPINE ISLANDS. Sketch of General Progress, U. S. Coast and Geodetic Survey, June 30, 1910. Mercator Projection, 1:5,000,000 in lat. 13° N. Black. Accompanies Report of Supt., C. and G. S., 1909-10. [Same symbols as on corresponding map listed under Alaska.]

PORTO RICO. General Progress Sketch, U. S. Coast and Geodetic Survey (June 30, 1910). (1:675,000 approx. [10.26 miles to an inch].) Black. On part of plate including Hawaiian Islands. Accompanies Report of Supt., C. and G. S., 1909-10. [Shows areas covered by primary and secondary triangulation and by topographic and hydrographic surveys.]

UNITED STATES. Sketch of General Progress, U. S. Coast and Geodetic Survey, June 30, 1910. 1:5,000,000 (78.90 miles to an inch). Two sheets. Black. Accompanies Report of Supt., C. and G. S., 1909-1910. [The current edition of this map, which is revised to date every year. It indicates areas covered by primary, secondary and reconnaissance triangulation and by topographic and hydrographic surveys, and shows lines along which deep-sea soundings have been taken and geodetic leveling has been done.]

UNITED STATES. Four base maps of the United States, 1:7,000,000 (110.46 miles to an inch) showing, in red: (1) Distribution of the Principal Astronomic Stations Occupied by the U. S. Coast and Geodetic Survey for Latitude, Longitude and Azimuth to June 30, 1910; (2) Positions and Connections of Telegraphic Longitude Stations from 1846 to June 30, 1910; (3) Routes of Geodetic Spirit Leveling and Positions of Gravity and Tide Stations to June, 1910; (4) Positions of Magnetic Stations Occupied to June 30, 1910. Accompany Report of Supt., U. S. Coast and Geodetic Survey, 1909-10.

U. S. HYDROGRAPHIC OFFICE CHARTS

Pilot Chart of the North Atlantic Ocean, May, 1911. On reverse: Method for Determining the Position of a Vessel in Sight of a Fixed Point, by Capt. N. Marcantetti.

Pilot Chart of South Atlantic Ocean, June, July, August, 1911.

Pilot Chart of South Pacific Ocean, June, July, August, 1911.

Pilot Chart of the North Pacific Ocean, July, 1911.

PORTO RICO. (Maps of Porto Rico, 1:1,000,000 approx. [15.78 miles to an inch] showing): I. Mean Annual Temperature and Prevailing Direction of the